Amendments to the Claims:

1. (currently amended) A method for producing an optical element comprising a substrate having a first side and a second side and at least one optically effective system of layers on said[[a]] substrate ~~having a first side and a second side~~, comprising the steps of

applying a protective layer to the second side of the substrate by means of a sputter deposition process, or selecting a substrate which has had a protective layer already applied to the second side thereof, and then

applying a system of layers to the first side of the substrate by means of a sputter deposition process, and

wherein the protective layer, except for any partial degradation during application of the system of layers, remains permanently on the substrate, and wherein the protective layer is selected or produced in such a manner that its optical properties are matched to the conditions which are to be satisfied by the optical element.

2. (original) The method as claimed in claim 1, wherein the protective layer is formed by a single layer or by an additional system of layers applied to the second side.

3. (original) The method as claimed in claim 1, wherein after the system of layers has been applied on the first side, a further system of layers is applied onto the second side by means of a sputter deposition process.

4. (original) The method as claimed in claim 3, wherein the protective layer is selected or produced in such a manner

that its optical properties are matched to the conditions which are to be satisfied by the further system of layers.

5. (original) The method as claimed in claim 1, wherein the protective layer is applied onto the second side by means of a sputter deposition process.

6. (original) The method as claimed in claim 5, wherein the protective layer is applied using a substantially oxygen-free plasma sputter deposition process.

7. (currently amended) The method as claimed in claim 3[[5]], wherein the protective layer is applied using the same target in the sputter deposition process which is also used to produce at least some layers of the system of layers applied on the first side and/or at least some of the layers of the further system of layers applied on the second side.

8. (currently amended) The method as claimed in claim 3[[7]], wherein the same target is used to produce the protective layer and the system of layers applied on the first side and/or the further system of layers applied on the second side, and ~~with~~ the process gas used in the sputter deposition processes in forming the layers of the systems of layers being selected as a function of the layer which is to be produced.

9. (original) The method as claimed in claim 1, wherein the composition of the protective layer is selected from the group consisting of silicon oxide, silicon nitride, aluminum oxide and/or aluminum nitride.

10. (original) The method as claimed in claim 1, wherein the protective layer is applied with a thickness of 10 to 40 nm.

11. (currently amended) The method as claimed in claim 1, wherein the material of the protective layer and its thickness are selected in such a way, as a function of the process parameters during application of the system of layers to the first~~front~~ side, that after this layer system has been applied, the protective layer has a predetermined thickness.

12. (original) The method as claimed in claim 1, wherein the step of applying a protective layer to the second side of the substrate includes applying a system of layers which acts as a protective layer, and wherein the first side is initially machined in order to obtain predetermined optical properties, and then the system of layers is applied to the first side.

13. (currently amended) An apparatus for producing an optical element comprising a substrate having a first side and a generally parallel second side and at least one optically effective system of layers on said[[a]] substrate ~~having a first side and a generally parallel second side~~, comprising an evacuable sputter chamber and a substrate holder with receiving elements for substrates, with each receiving element being mounted so that each substrate can be rotated both about a turning axis[[,]] which is oriented substantially parallel to the substrate sides, and about an axis of rotation[[,]] which is oriented substantially perpendicularly to the substrate sides.

14. (original) The apparatus as claimed in claim 13, further comprising a common drive for the rotary movement and the turning movement.

15. (new) A method for producing an optical element comprising a substrate having a first side and a second side and at least one optically effective system of layers on said substrate, comprising the steps of

applying a protective layer to the second side of the substrate by means of a sputter deposition process, and then

applying a system of layers to the first side of the substrate by means of a sputter deposition process.

16. (new) The method as claimed in claim 15, wherein the protective layer is applied using a substantially oxygen-free plasma sputter deposition process.

17. (new) A method for producing an optical element comprising a substrate having a first side and a second side and at least one optically effective system of layers on said substrate, comprising the steps of

applying a protective layer to the second side of the substrate by means of a sputter deposition process, or selecting a substrate which has had a protective layer already applied to the second side thereof, and then

applying a system of layers to the first side of the substrate by means of a sputter deposition process, and

wherein the composition of the protective layer is selected from the group consisting of silicon oxide, silicon nitride, aluminum oxide and/or aluminum nitride.

18. (new) A method for producing an optical element comprising a substrate having a first side and a second side and at least one optically effective system of layers on said substrate, comprising the steps of

applying a protective layer to the second side of the substrate by means of a sputter deposition process, or selecting a substrate which has had a protective layer already applied to the second side thereof, and then

applying a system of layers to the first side of the substrate by means of a sputter deposition process, and

wherein the material of the protective layer and its thickness are selected in such a way, as a function of the process parameters during application of the system of layers to the first side, that after this layer system has been applied, the protective layer has a predetermined thickness.

19. (new) A method for producing an optical element comprising a substrate having a first side and a second side and at least one optically effective system of layers on said substrate, comprising the steps of

applying a protective layer to the second side of the substrate by means of a sputter deposition process, or selecting a substrate which has had a protective layer already applied to the second side thereof, and then

applying a system of layers to the first side of the substrate by means of a sputter deposition process, and

wherein the step of applying a protective layer to the second side of the substrate includes applying a system of layers which acts as a protective layer, and wherein the first side is initially machined in order to obtain predetermined optical properties, and then the system of layers is applied to the first side.